**Assignment: Supervised Learning – Classification and Regression**

**Course Code:** CS3151  
**Topic:** Supervised Learning  
**CLO:** CLO3 – Analyze artificial intelligence techniques for practical problem-solving  
**Total Marks:** 20  
**Submission Deadline:** 28-06-2025

**Question 1: Understanding Supervised Learning (5 marks)**

a. Define supervised learning. What are its key characteristics?  
b. Explain the difference between classification and regression with at least one real-world example of each.

**Question 2: Classification (7 marks)**

a. Describe the general process of building a classification model.  
b. Explain how logistic regression work for classification tasks. Illustrate your answer using a simple dataset of your choice.  
c. What are common performance metrics used to evaluate classification models? Define any two.

**Question 3: Regression (5 marks)**

a. Explain the concept of regression in supervised learning. How is it different from classification?  
b. Describe linear regression and its equation. What do the coefficients represent?  
c. Give one example where regression is more appropriate than classification and explain why.

**Question 4: Comparative Analysis (3 marks)**

Compare and contrast classification and regression in terms of:

* Output variable
* Algorithm examples
* Evaluation metrics